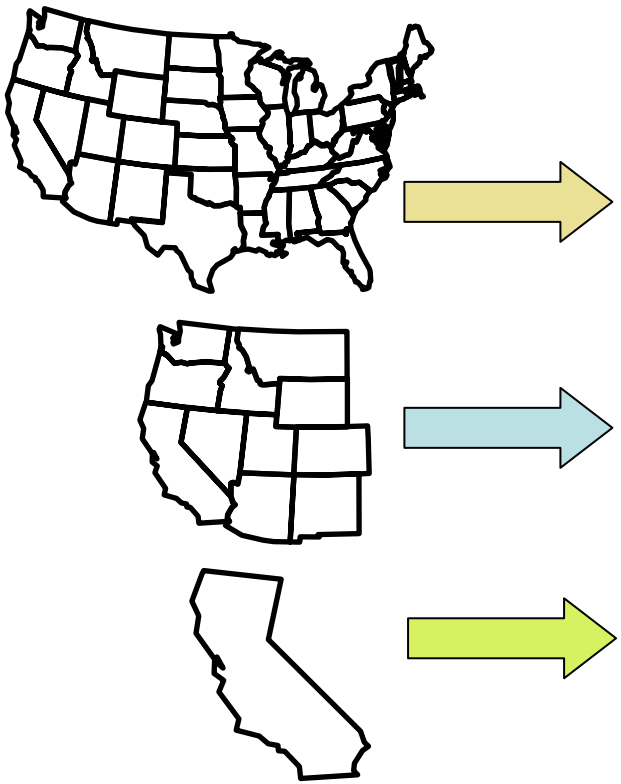
California Natural Gas Market Outlook

Energy Infrastructure Policy Group
Office of Energy Projects
Federal Energy Regulatory Commission
December 9, 2003

From 1991 to 2001, the West shows greater population and Gross State Product growth than the US as a whole. Western energy use lags behind national consumption rate of growth. Western energy use is about 13% of total US energy consumption.

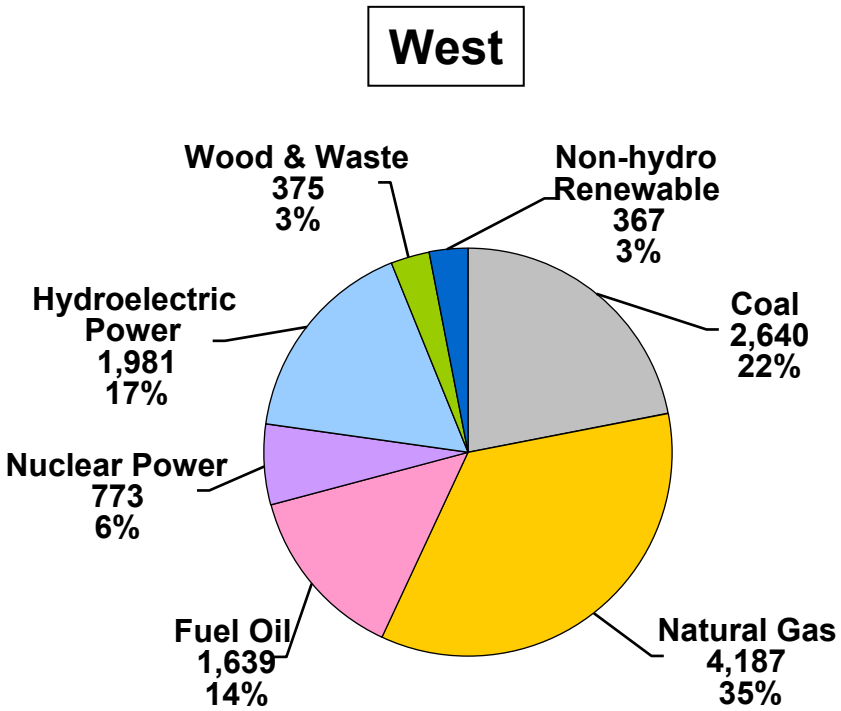


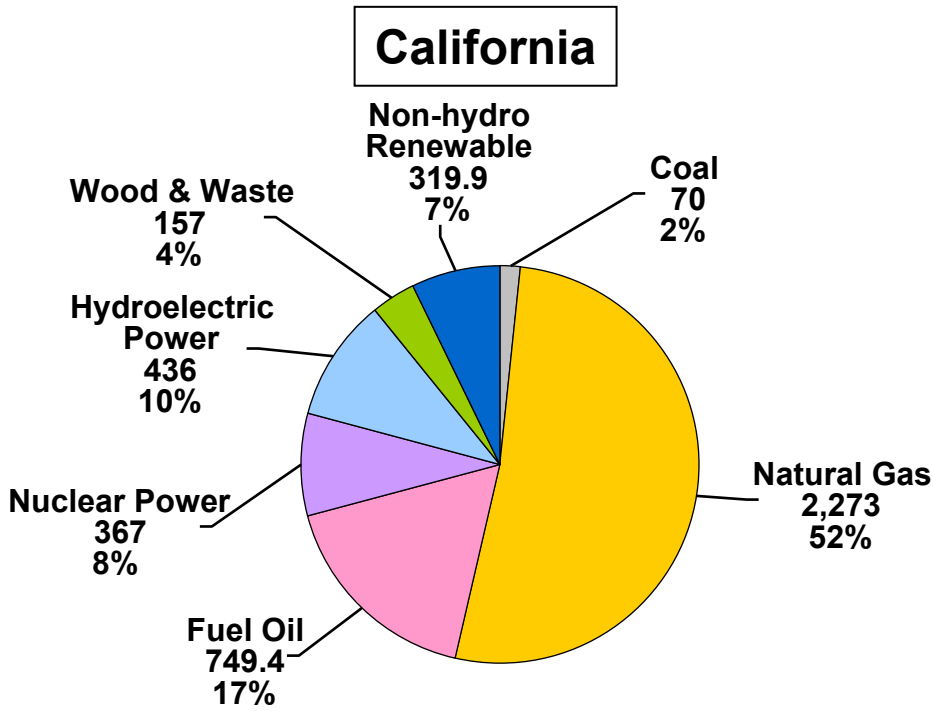
Population	Real GSP	Energy Use*
↑ 11.3%	↑ 41.8%	↑ 16.2%
285.3 million people	10.1 trillion dollars	69.7 quads
↑ 16.2%	↑ 44.3%	↑ 12.6%
62.7 million people	2.3 trillion dollars	12.0 quads
↑ 11.9%	↑ 40.1%	↑ 10.3%
34.6 million people	1.4 trillion dollars	4.4 quads

*Energy use data compares 1991 to 2000; does not include energy use for transportation purposes.

Source: US Census Bureau, Bureau of Economic Analysis, EIA.

In 2000, the West consumed more natural gas than any other energy source. California accounted for over half of the natural gas consumed in the West.

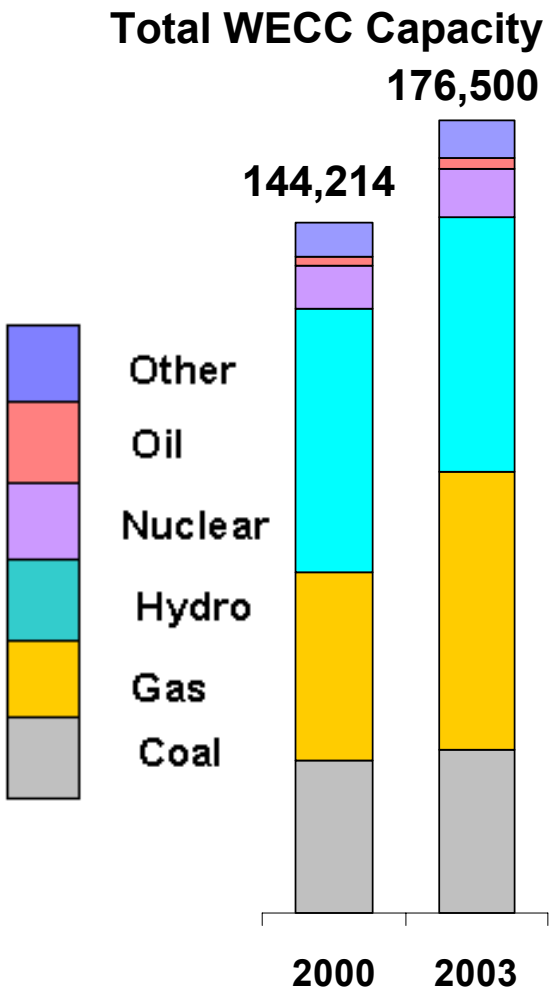


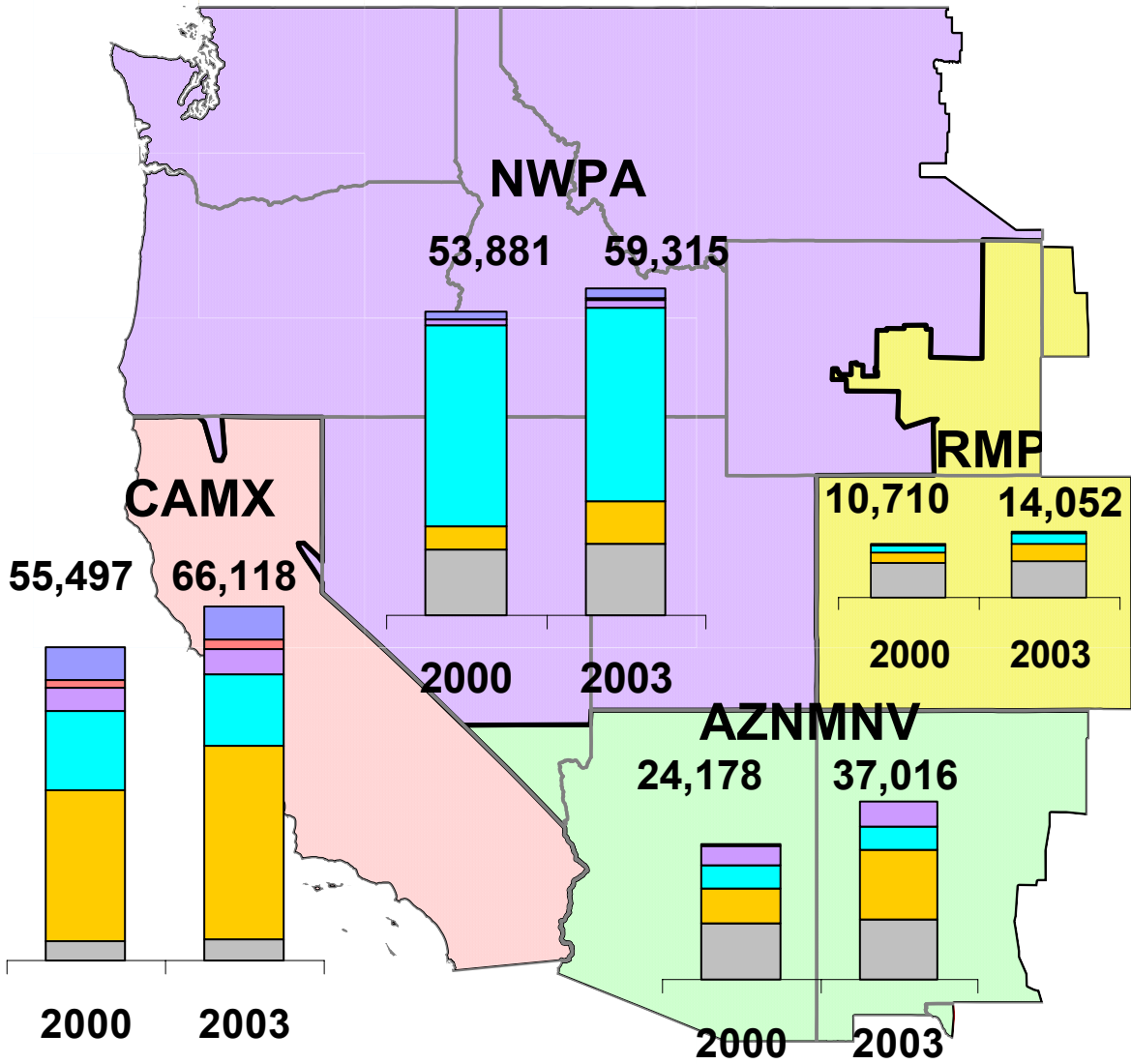


Energy Consumption by Source (in trillion Btu)

Source: EIA's State Energy Data 2000

From Jan. 2000 to October 2003, generation capacity in the West has increased 22% fueled mostly by natural gas.



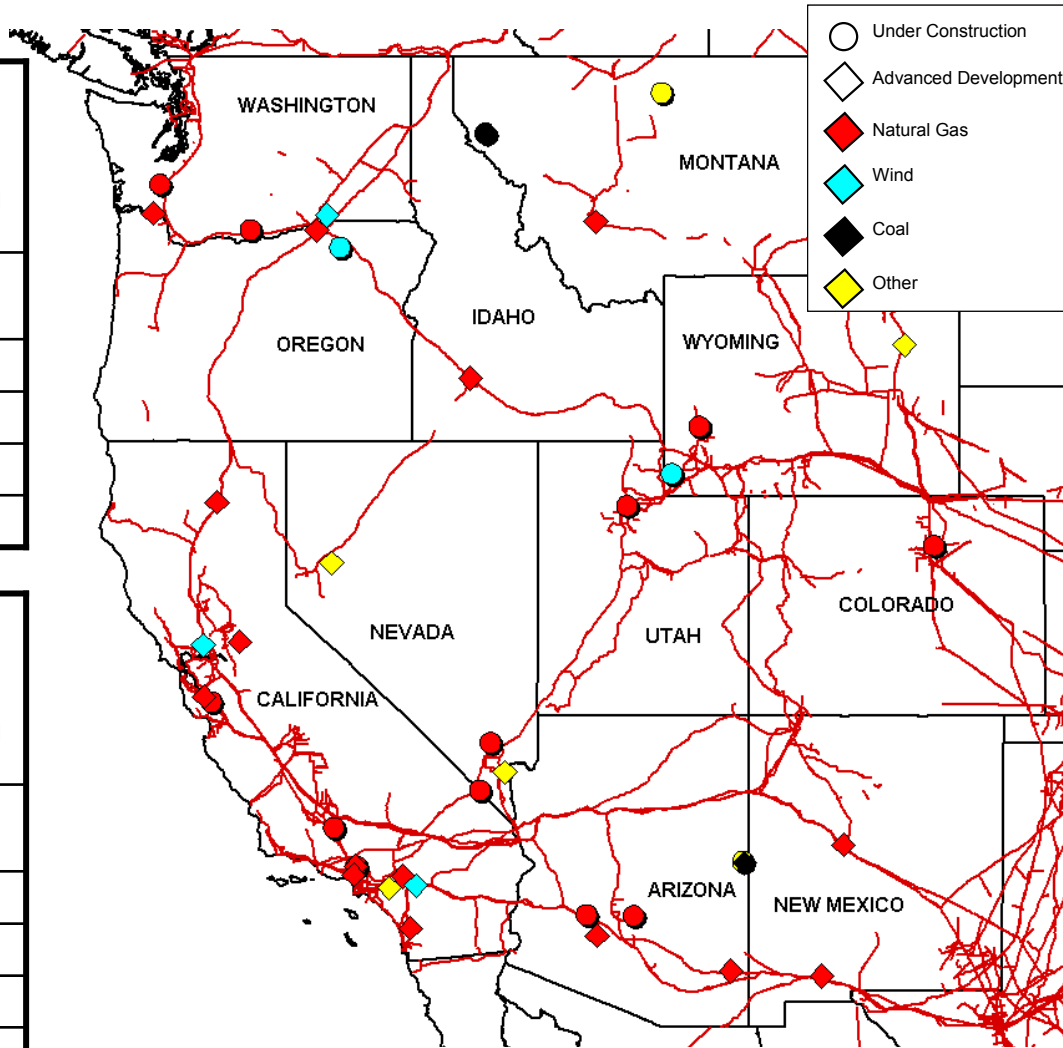


Source: RDI PowerDat, October 2003 release and Jan. 2001 release.

Planned gas-fired electric plants in the west for the period 2003-2006 will be located along the major interstate natural gas pipelines, and along the intrastate natural gas pipelines in California.

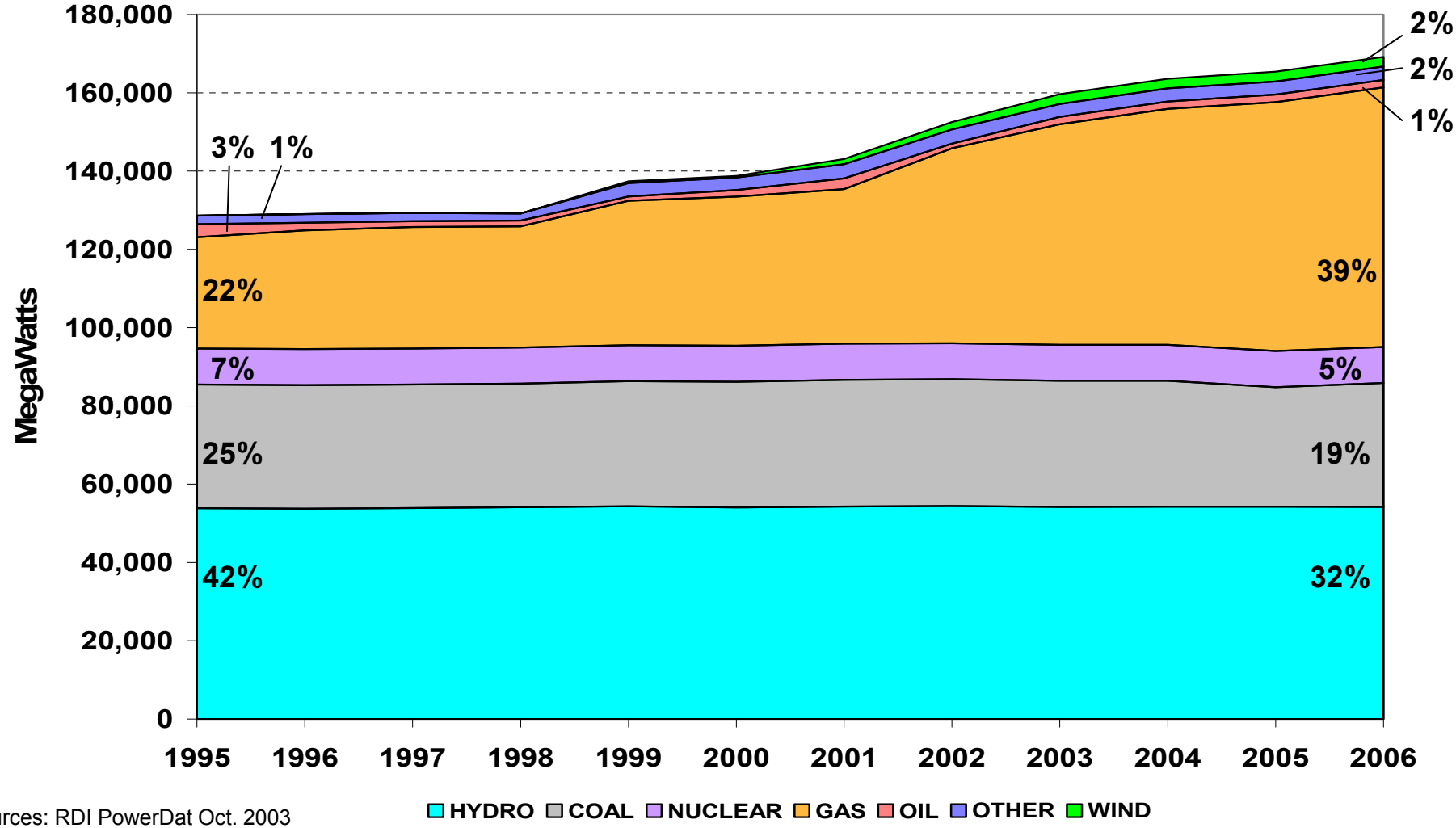
WECC Year	Proposed Generation in MW (Under Construction & Advanced development)	Related Gas Demand with Heat Rate of 5,687 BTU/KWH (MMcf/d)	Related Gas Demand with Heat Rate of 7,000 BTU/KWH (MMcf/d)
2003 (Post Oct 03)	1,175	93	115
2004	4,067	323	397
2005	4,957	394	484
2006	2,753	219	269
Total	12,952	1,029	1,265

California Year	Proposed Generation in MW (Under Construction & Advanced development)	Related Gas Demand with Heat Rate of 5,687 BTU/KWH (MMcf/d)	Related Gas Demand with Heat Rate of 7,000 BTU/KWH (MMcf/d)
2003 (Post Oct 03)	0	0	0
2004	747	59	73
2005	2,892	230	283
2006	1,600	127	156
Total	5,239	416	512



Source: RDI's POWERmap and NEWGen (September 2003 release)

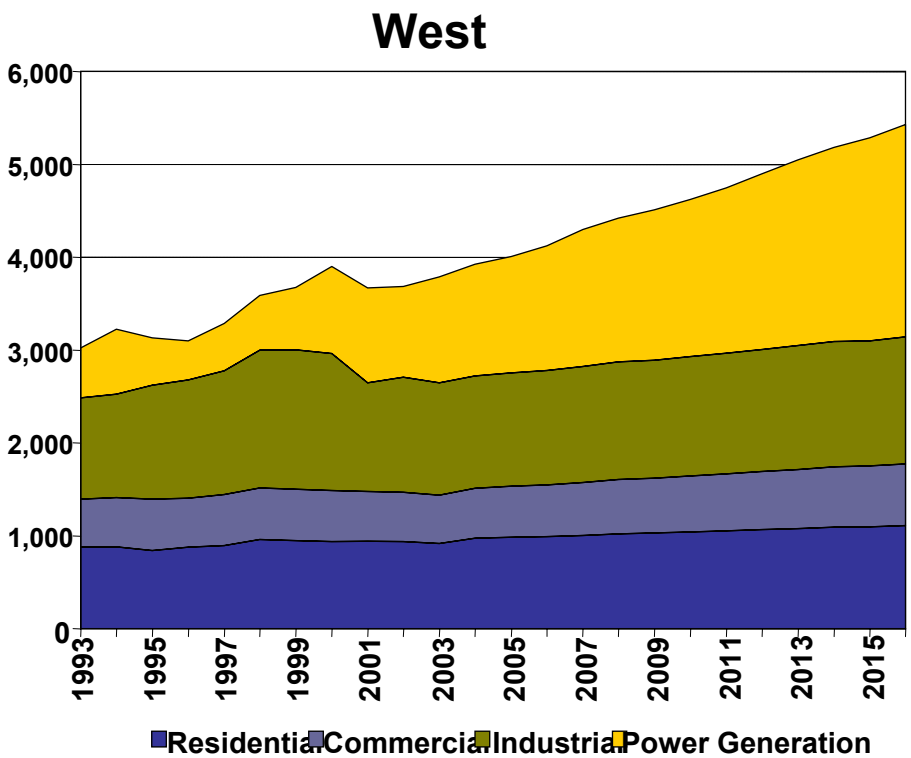
The West's dependency on natural gas for generation capacity has grown steadily over the years, and should replace hydro as the number one fuel source in 2006.

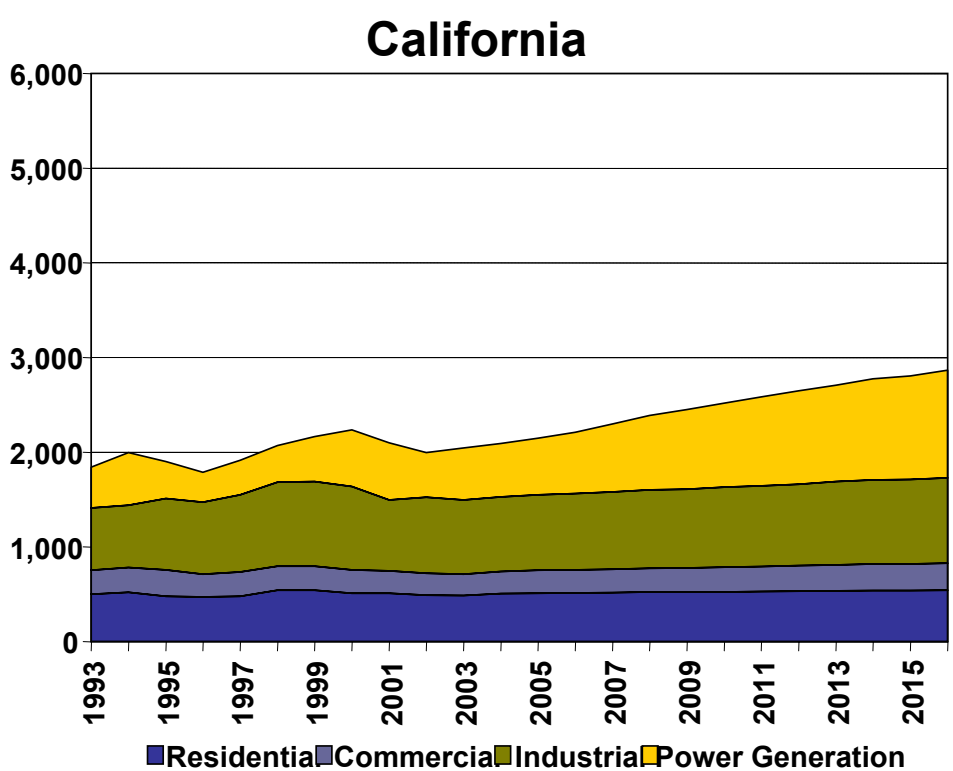


Sources: RDI PowerDat Oct. 2003 (Demonstrated Capacity); NewGen Oct. 2003

Electric generation has been and will continue to be the fastest growing sector in the West and California as well as the largest gas consuming sector.

Annual Gas Demand (in Bcf)





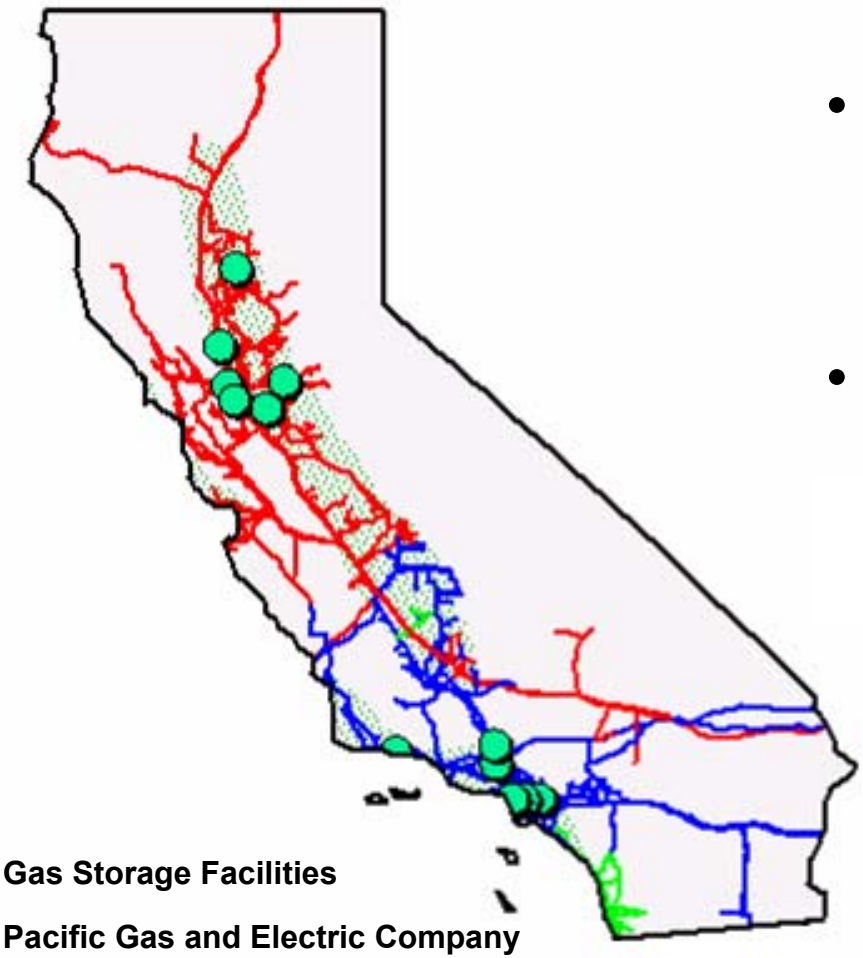
Source: EEA's October 2003 Custom Region Data Sets

The West and California are dependent on production from gas originating in the Rockies, Southwest and Canada.

Western Gas Facts – 2002	United States	West	Cal	%Cal of US & West
Total Gas Consumption	20.8 Tcf	3.7 Tcf	2.0 Tcf	10%/54%
Total Dry Gas Production	19.4 Tcf	4.6 Tcf	0.3 Tcf	2%/7%
Total Proved Gas Reserves	186.9 Tcf	59.9 Tcf	3.1 Tcf	2%/5%
Total Storage Capacity (2003)	8.2 Tcf	1.4 Tcf	0.5 Tcf	6%/36%
Total Net Imports from Canada	3.7 Tcf	1.2 Tcf	0.6 Tcf*	16%/50%
Total Net Exports to Mexico	0.26 Tcf	0.05 Tcf	0.04 Tcf	15%/80%

* In 2002, 28% of California's total consumption was served with Canadian supplies. Source: EEA's October 2003 Data Base, EIA, Office of Fossil Energy, and CEC Website

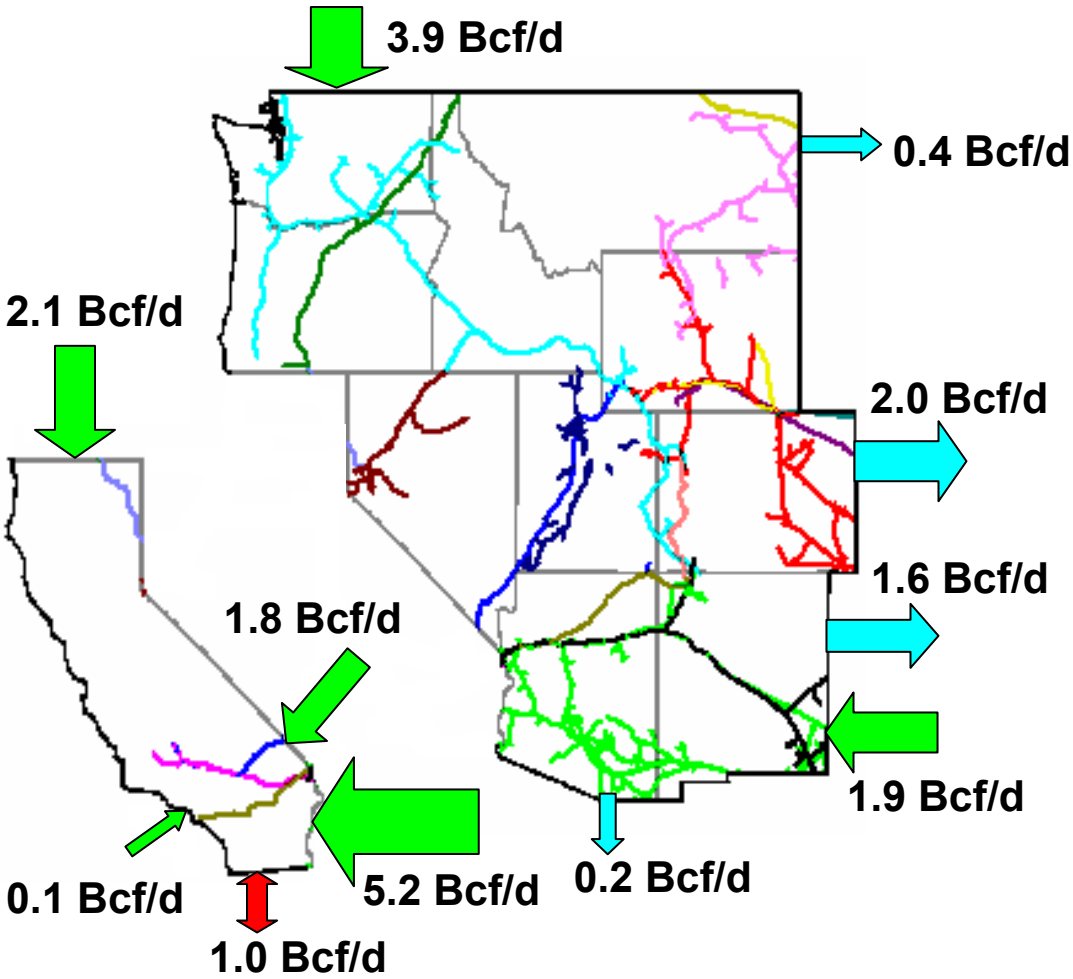
California's Natural Gas Supplies by Source



- California imports 83% of its natural gas requirements.
- California annual gas consumption by source in 2002:
  - Canada 28.2%
  - Southwest 43.4%
  - Rocky Mountain 11.4%
  - In-state production 17.0%

Source: RDI's Powermap and The California Energy Commission's Website

In 2003, the West is dependent on supplies carried on pipeline capacity originating in Canada and the Southwest as well as production in the Rockies. California is dependent on pipeline capacity from the Northwest, Southwest and Kern River.



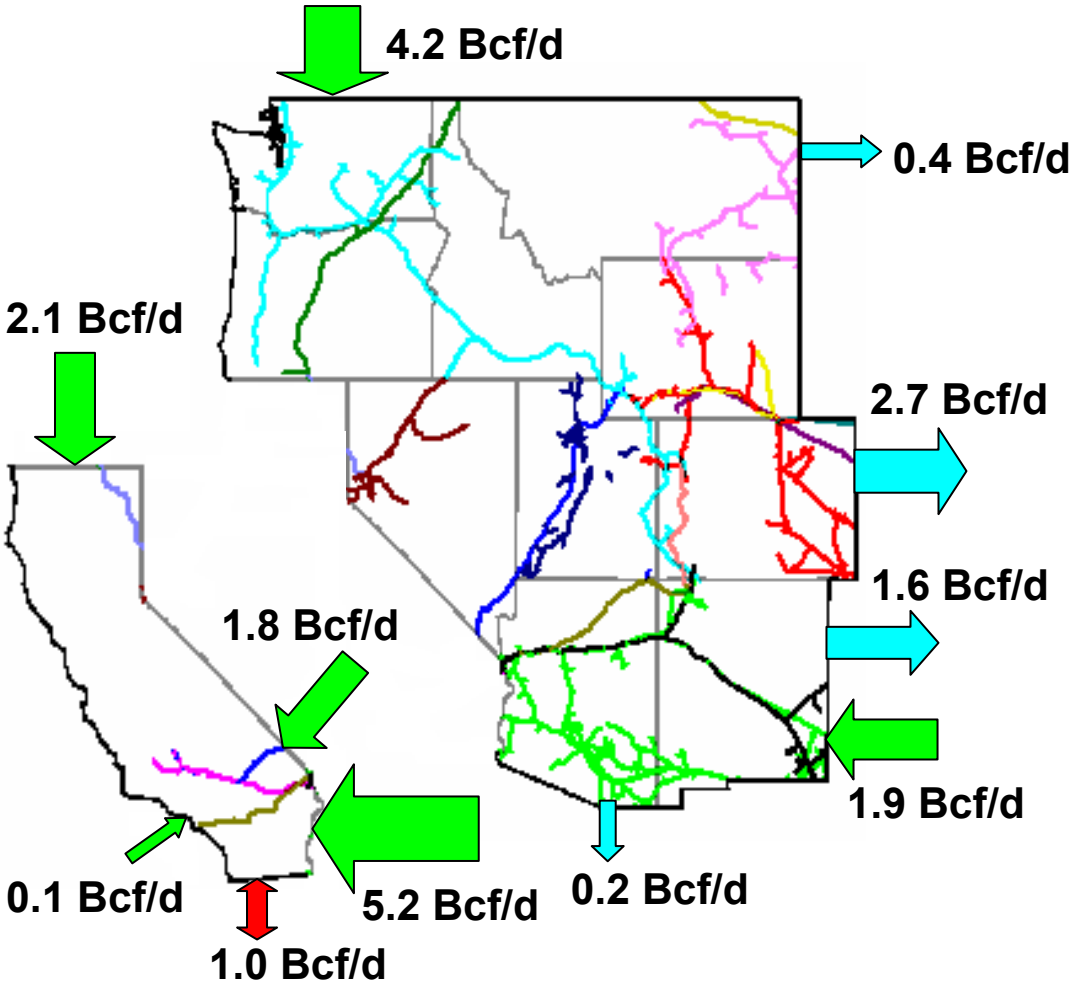
Major Western Interstate Gas Pipelines

by Company Name

- Colorado Interstate Gas Co.
- El Paso Natural Gas Co.
- Kern River Gas Transmission Co.
- Mojave Pipeline Co.
- Northern Border Pipeline Co.
- Northwest Pipeline Corp.
- Paiute Pipeline Co.
- PG&E Gas Transmission, Northwest Corp.
- Questar Gas Co.
- Southern Star Central Gas Pipeline
- Southern Trails Pipeline
- Trailblazer Pipeline Co.
- TransColorado Gas Transmission Co.
- Transwestern Pipeline Co.
- Tuscarora Gas Transmission Co.
- Williston Basin Interstate Pipeline Co.
- Wyoming Interstate Co., Ltd.

Source: RDI's Powermap and EEA's October 2003 data base (Average Pipeline Capacity for 2003)

In 2006, with the development of the Rocky Mountain basins, increased pipeline capacity is projected to serve the Midwest and California.



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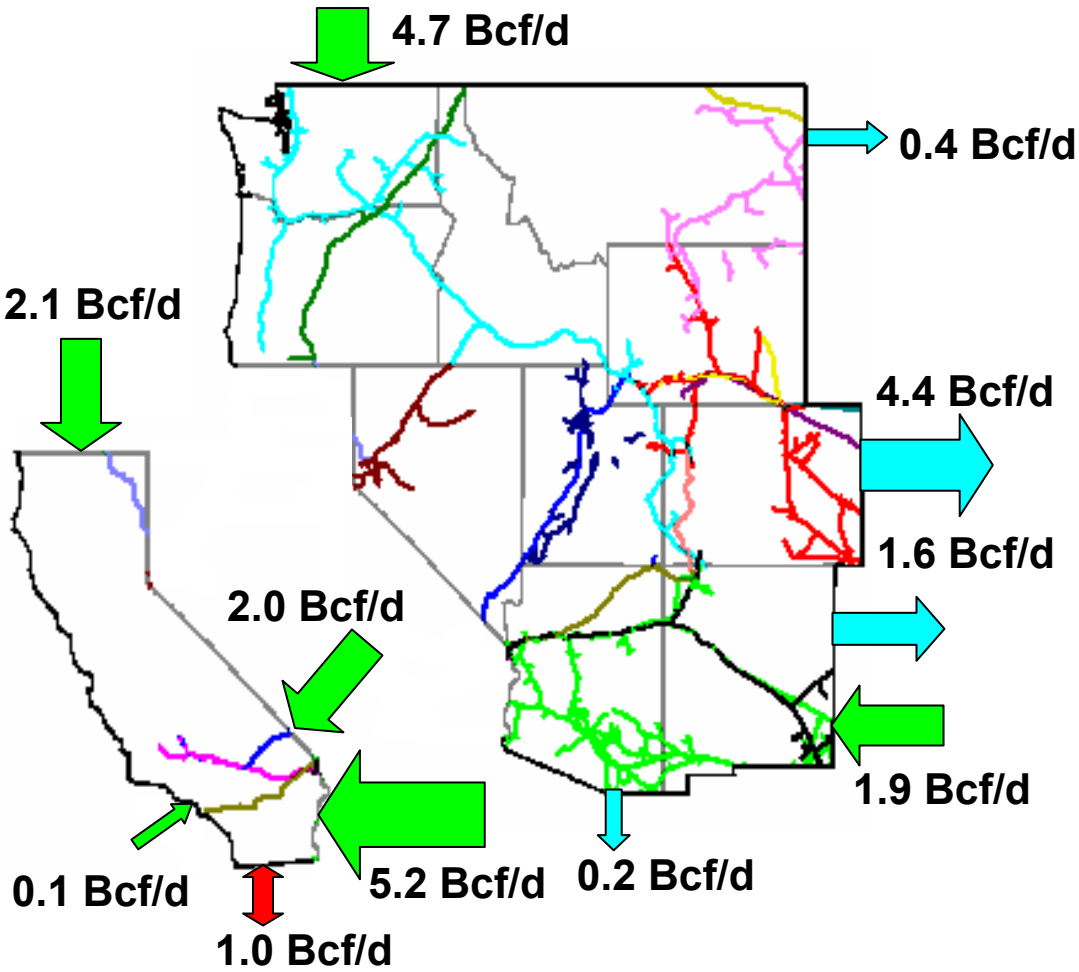
Source: RDI's Powermap and EEA's October 2003 data base (Average Pipeline Capacity for 2006)

In 2011, increased pipeline capacity in the West is projected to serve the Midwest primarily and California to a lesser extent.



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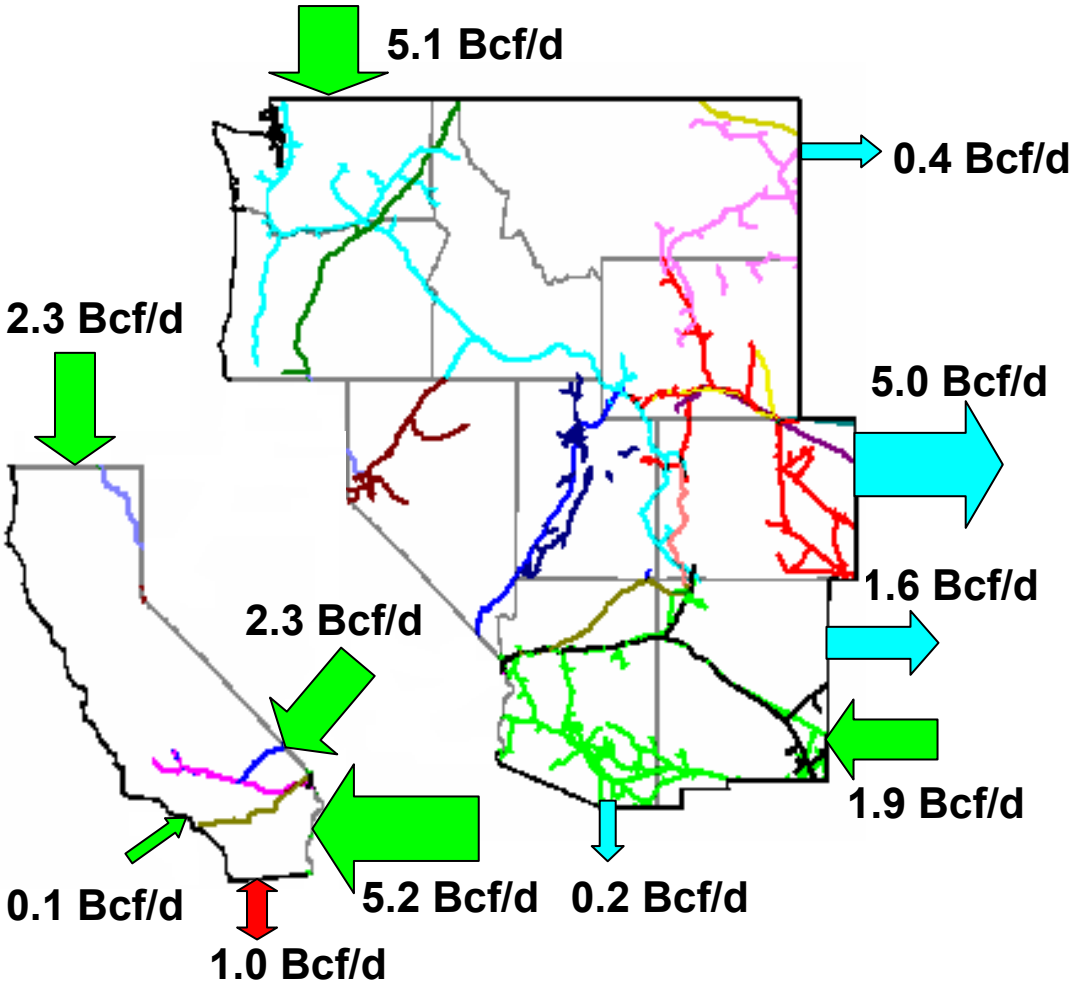
Source: RDI's Powermap and EEA's October 2003 data base (Average Pipeline Capacity for 2011)

In 2016, increased pipeline capacity is projected to serve the both the Midwest and California.



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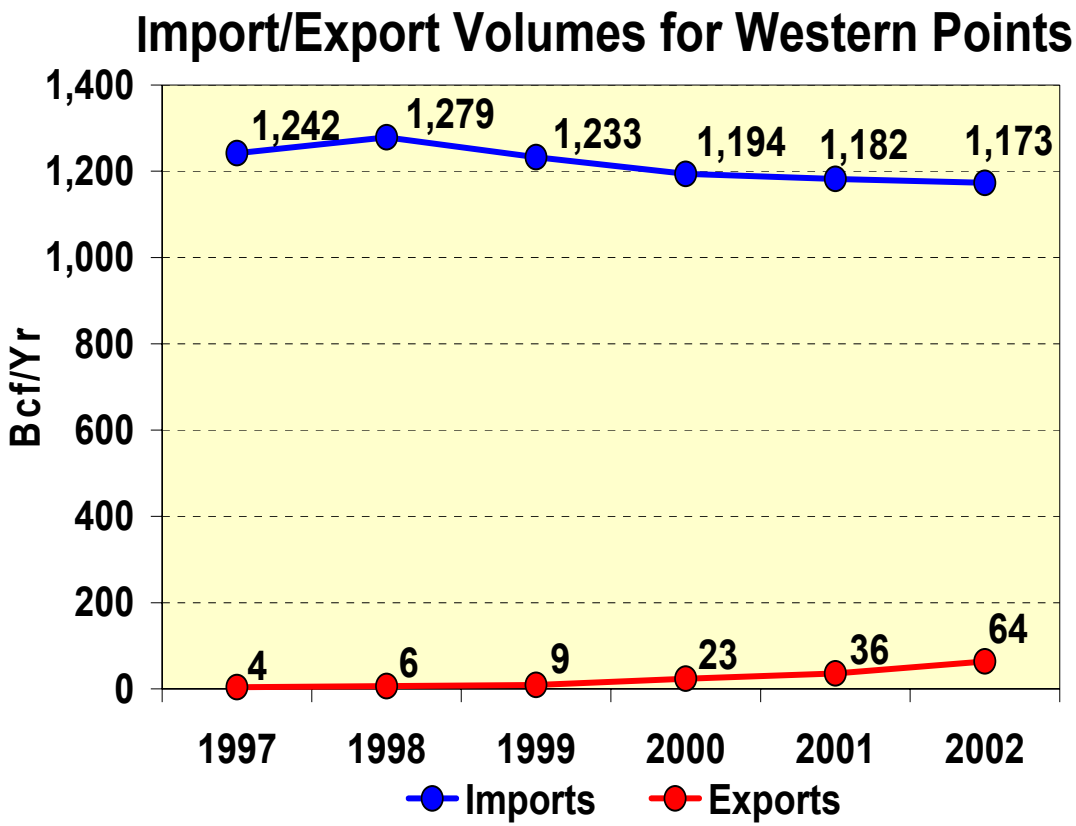
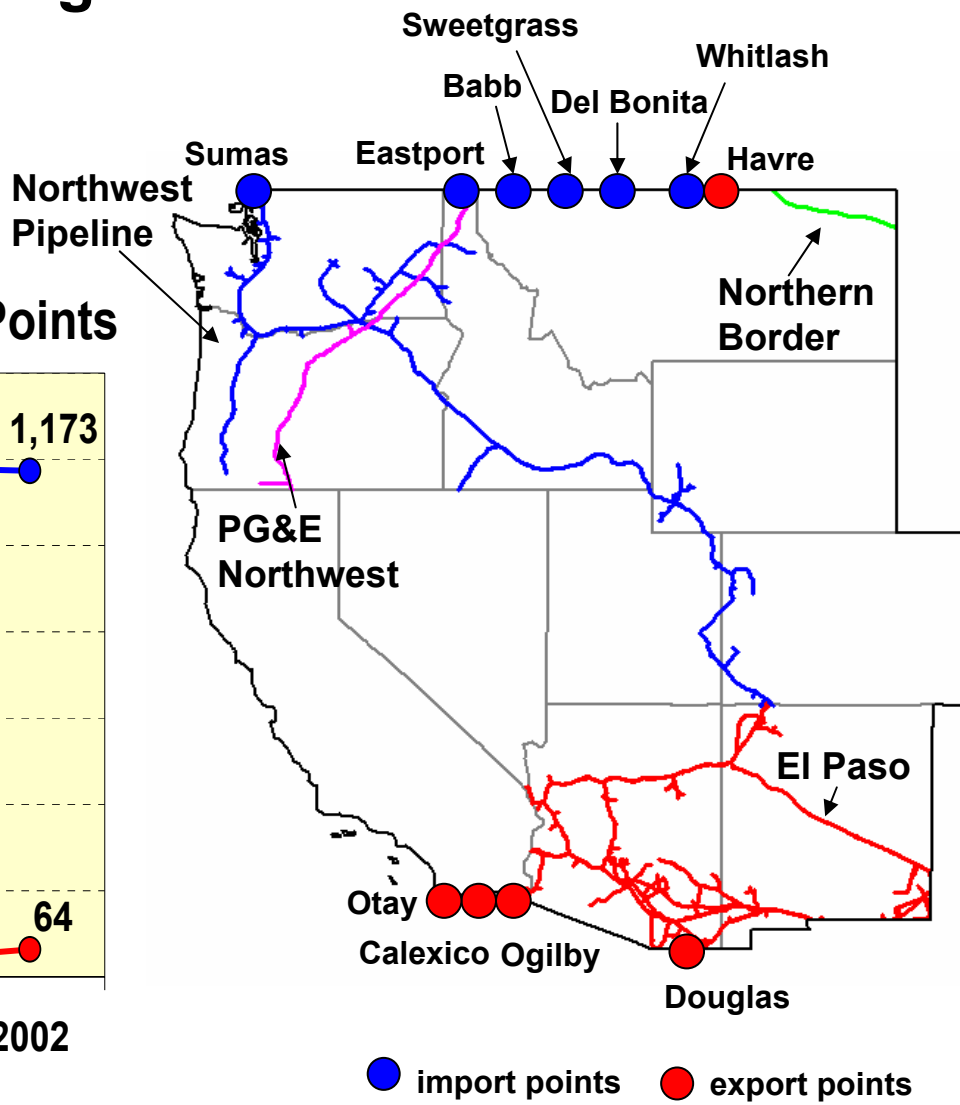
Source: RDI's Powermap and EEA's October 2003 data base (Average Pipeline Capacity for 2016)

Natural gas imports from Canada in the West have declined slightly, while exports of natural gas to Mexico continue to increase.

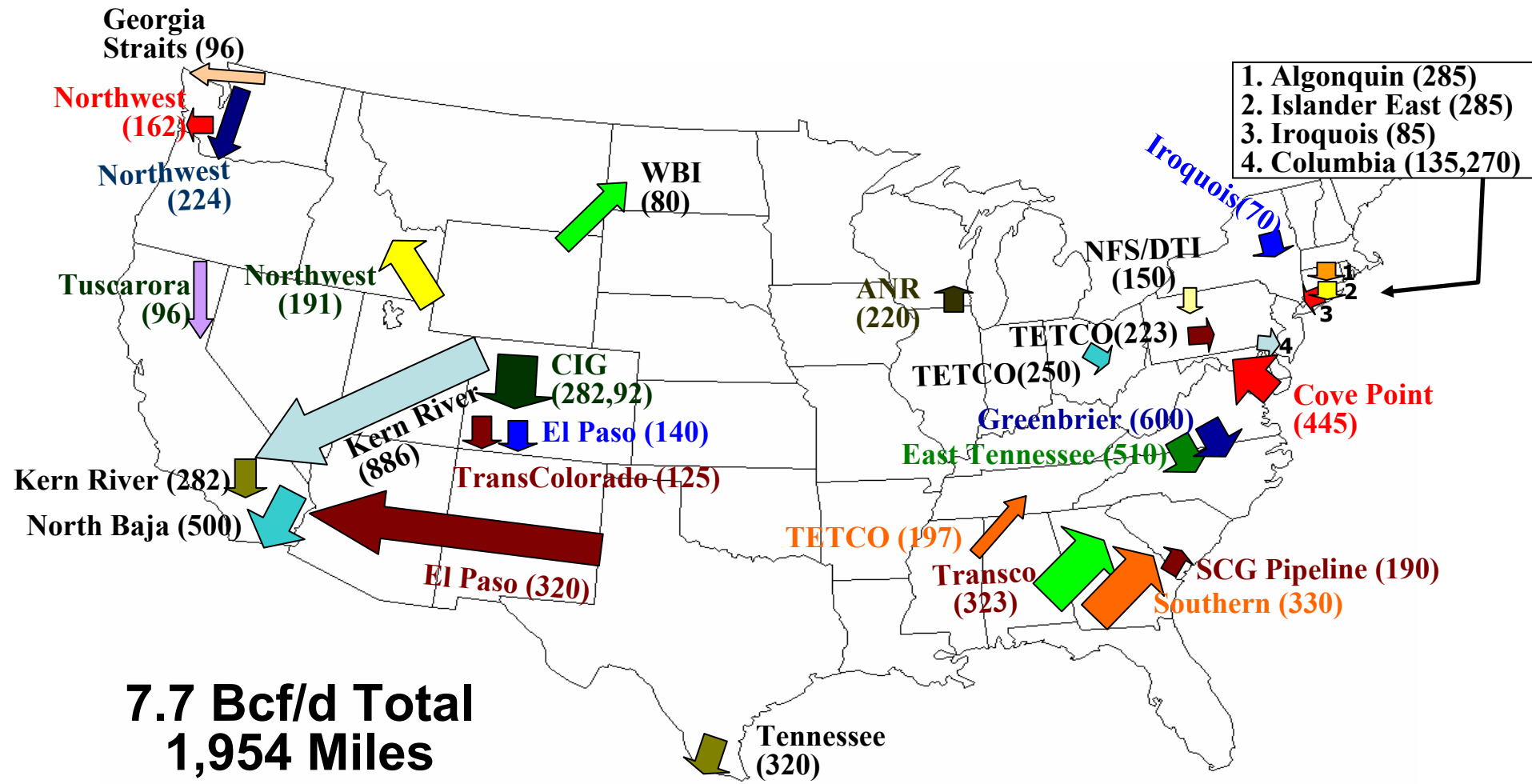




* Volumes do not include Port of Morgan, MT since those volumes go to the Midwest.

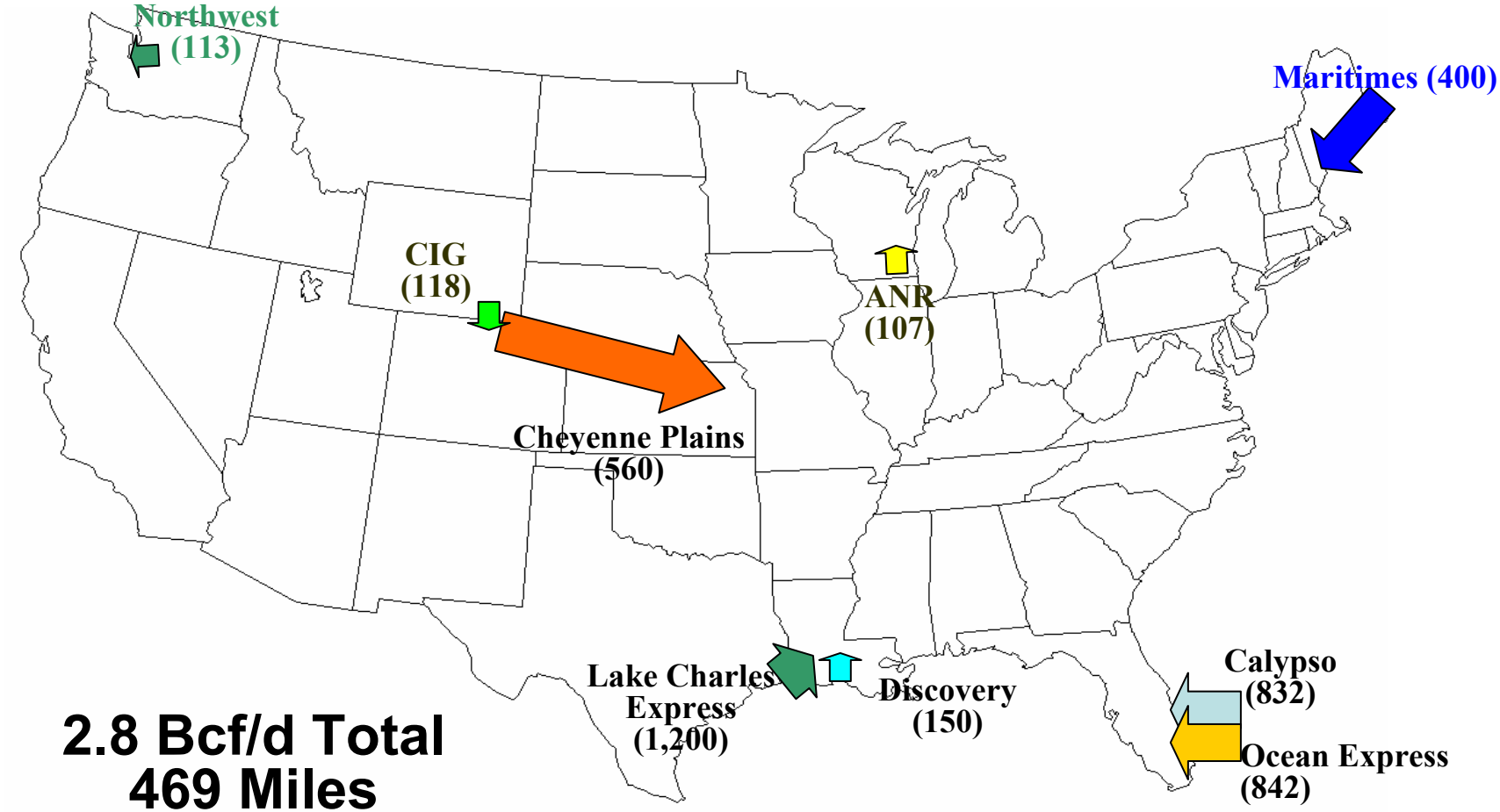
Source: RDI Power Map; Office of Fossil Energy's Natural Gas Imports/Exports; and EIA's Natural Gas Annual 2001

Major Pipeline Projects Certificated (MMcf/d)
January 2002 to December 2003

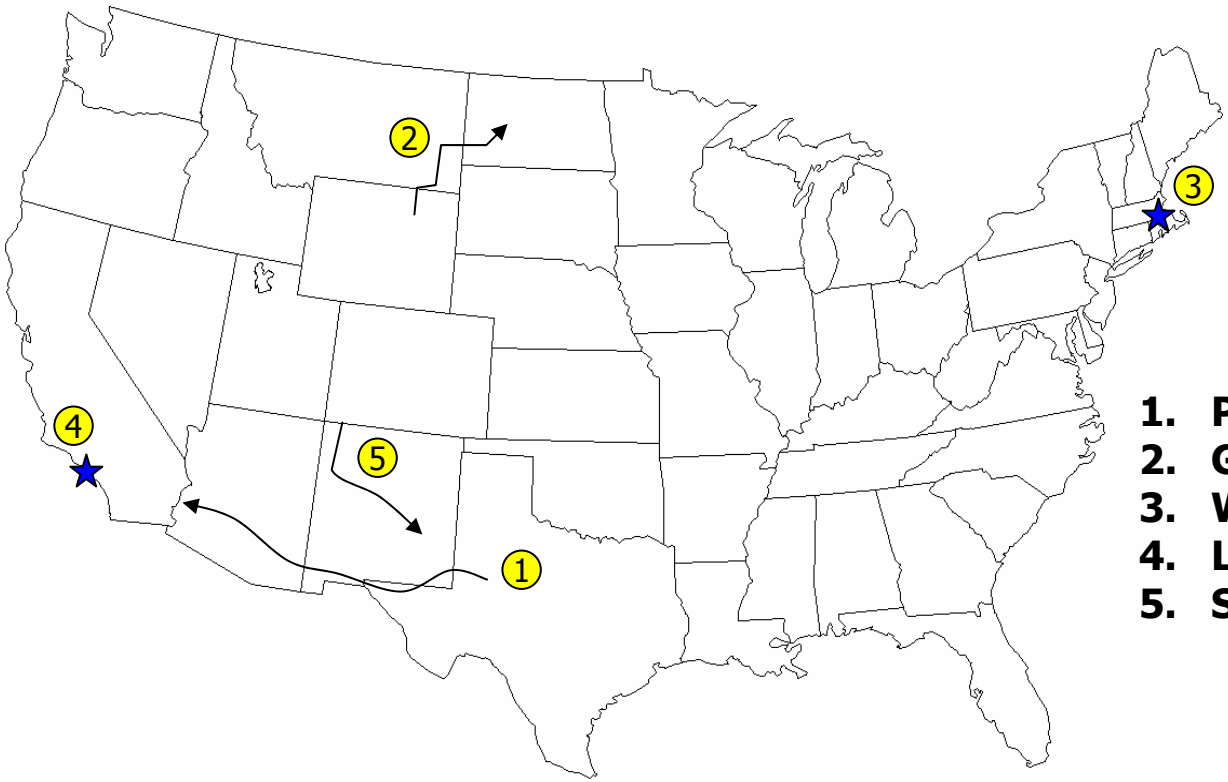


7.7 Bcf/d Total
1,954 Miles

Major Pipeline Projects Pending (MMcf/d)
December 2003



NEPA Pre-Filing Projects
December 2003

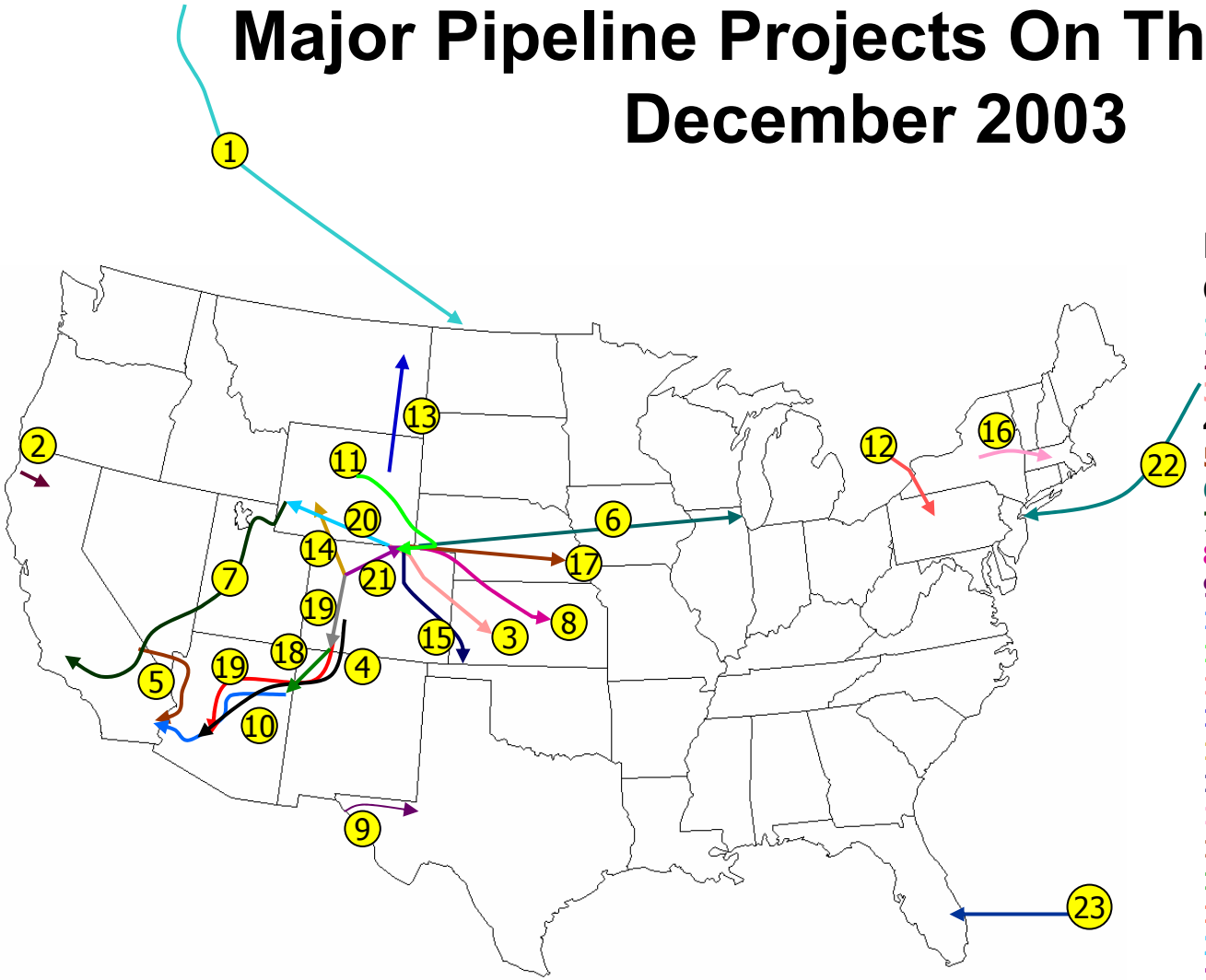


Project Name – Capacity In MMcf/d

1. **Picacho Pipeline – 1,000**
2. **Grasslands Expansion – 120**
3. **Weaver's Cove LNG – 390 to 790**
4. **Long Beach LNG – 700**
5. **San Juan 2005 Expansion – 600**

Pipeline: 1.7 Bcf/d Capacity, 908 Miles
LNG: 1.1 Bcf/d Deliverability

Major Pipeline Projects On The Horizon
December 2003



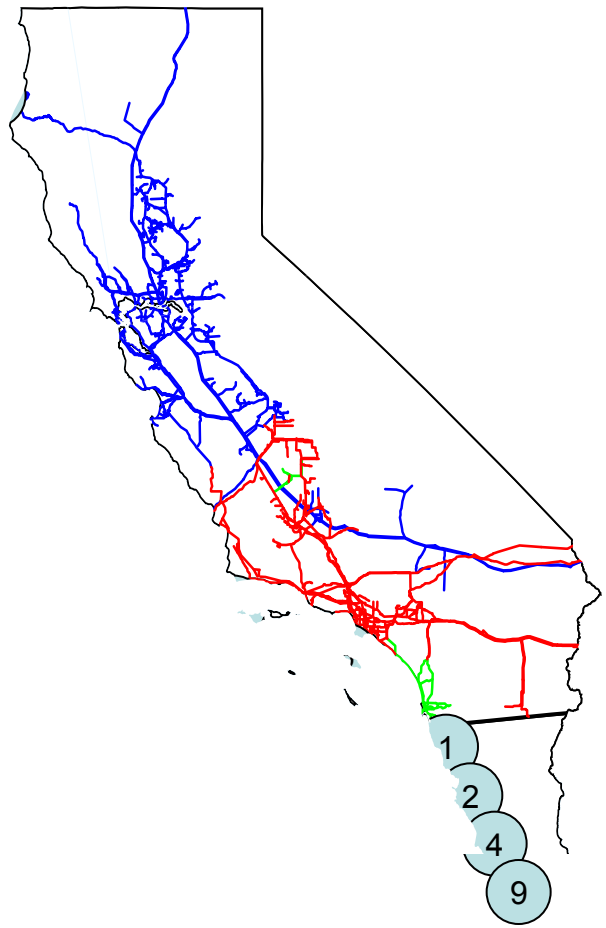
16.0 Bcf/d Total
6,309 Miles

Project Name – Capacity In MMcf/d

1. Alaska Gas – 4,500
2. Samoa Point – 1,000
3. Cheyenne Plains – 170
4. Coronado – 500
5. Desert Crossing – 800
6. Beacon – 1,000
7. Kern River Expansion – 500
8. Advantage – 330
9. West Texas – 300
10. Silver Canyon – 750
11. Wheatland Expansion – 80
12. Northwinds – 500
13. Bison – 240
14. Questar – 300
15. Western Frontier – 540
16. Freedom Trail – 150
17. Trailblazer – 100
18. TransColorado Extension – 750
19. Sun Devil/Phoenix Lateral – 450
20. WIC Expansion West – 470
21. WIC – 300
22. Blue Atlantic – 1,000
23. Seafarer – 750

Between 2006 and 2009, approximately 8.65 Bcf per day of natural gas *may* be available to California from potential LNG import terminals to be located in California and Baja California.

Pacific Gas & Electric Company
San Diego Gas & Electric Company
Southern California Gas Company



Planned LNG Import Terminals

1. **Baja California:** 0.6 Bcfd, 2007 (Conoco-Phillips)
2. **Baja California:** 0.85 Bcfd, 2007 (Marathon)
3. **Baja California:** 1.4 Bcfd, 2008 (Chevron Texaco)
4. **Baja California:** 1.3 Bcfd, 2007 (Sempra)
5. **S. California Offshore:** 1.5 Bcfd, 2008 (BHP Billiton)
6. **Long Beach Harbor, CA:** 0.7 Bcfd, 2008 (SES)
7. **S. California Offshore:** 0.5 Bcfd, 2006 (Crystal)
8. **Humboldt Bay:** 0.5 Bcfd, 2009 (Calpine)
9. **Baja California:** 1.3 Bcfd, 2007 (Shell)

Source: RDI's Powermap; The California Energy Commission's Website; and FERC Staff